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Tai, Mei-Sheng  
McCartney, John

<120> Modified TGF-beta Superfamily Proteins

<130> STK-075

<140> US 09/375,333

<141> 1999-08-16

<160> 124

<170> PatentIn version 2.0

<210> 1

<211> 35

<212> PRT

<213> Drosophila melanogaster

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<223> 60-A

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Gly Cys His  
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<211> 35

<212> PRT

<213> Homo sapiens

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Gly Cys Arg  
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<211> 35  
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<213> Homo sapiens

<220>  
<223> BMP-3

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Val Pro Glu Lys Met Ser Ser Leu Ser Ile Leu Phe Phe Asp Glu Asn  
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Ala Cys Arg  
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<220>  
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Asp Lys Val Val Leu Lys Asn Tyr Gln Glu Met Val Val Glu Gly Cys  
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Gly Cys Arg  
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Ser Asn Val Ile Leu Lys Lys Tyr Arg Asn Met Val Val Arg Ser Cys

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Gly Cys His  
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Ala Pro Thr Lys Leu Asn Ala Ile Ser Val Leu Tyr Phe Asp Asp Asn  
1 5 10 15

Ser Asn Val Ile Leu Lys Lys Tyr Arg Asn Met Val Val Arg Ala Cys  
20 25 30

Gly Cys His  
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<210> 7  
<211> 36  
<212> PRT  
<213> Homo sapiens

<220>  
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<400> 7

Val Pro Thr Lys Leu Ser Pro Ile Ser Val Leu Tyr Lys Asp Asp Met  
1 5 10 15

Gly Val Pro Thr Leu Lys Tyr His Tyr Glu Gly Met Ser Val Ala Glu  
20 25 30

Cys Gly Cys Arg  
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<213> Homo sapiens

<220>  
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<400> 8

Val Pro Thr Lys Leu Glu Pro Ile Ser Ile Leu Tyr Leu Asp Lys Gly  
 1 5 10 15

Val Val Thr Tyr Lys Phe Lys Tyr Glu Gly Met Ala Val Ser Glu Cys  
 20 25 30

Gly Cys Arg  
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<210> 9  
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 <212> PRT  
 <213> Homo sapiens

<220>  
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<400> 9

Thr Pro Thr Lys Met Ser Pro Ile Asn Met Leu Tyr Phe Asn Asp Lys  
 1 5 10 15

Gln Gln Ile Ile Tyr Gly Lys Ile Pro Gly Met Val Val Asp Arg Cys  
 20 25 30

Gly Cys Ser  
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<210> 10  
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 <212> PRT  
 <213> Bos taurus

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<400> 10

Val Pro Thr Lys Leu Thr Pro Ile Ser Ile Leu Tyr Ile Asp Ala Gly  
 1 5 10 15

Asn Asn Val Val Tyr Asn Glu Tyr Glu Glu Met Val Val Glu Ser Cys  
 20 25 30

Gly Cys Arg  
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 <212> PRT

<213> Gallus gallus

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<223> Dorsalin

<400> 11

Val Pro Thr Lys Leu Asp Ala Ile Ser Ile Leu Tyr Lys Asp Asp Ala  
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Gly Val Pro Thr Leu Ile Tyr Asn Tyr Glu Gly Met Lys Val Ala Glu  
20 25 30

Cys Gly Cys Arg  
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<210> 12

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<212> PRT

<213> Drosophila melanogaster

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<223> DPP

<400> 12

Val Pro Thr Gln Leu Asp Ser Val Ala Met Leu Tyr Leu Asn Asp Gln  
1 5 10 15

Ser Thr Val Val Leu Lys Asn Tyr Gln Glu Met Thr Val Val Gly Cys  
20 25 30

Gly Cys Arg  
35

<210> 13

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<212> PRT

<213> Mus musculus

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<223> GDF-1

<400> 13

Val Pro Glu Arg Leu Ser Pro Ile Ser Val Leu Phe Phe Asp Asn Glu  
1 5 10 15

Asp Asn Val Val Leu Arg His Tyr Glu Asp Met Val Val Asp Glu Cys  
20 25 30

Gly Cys Arg

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<400> 14

Val Pro Thr Lys Leu Ser Pro Ile Ser Met Leu Tyr Gln Asp Ser Asp  
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Lys Asn Val Ile Leu Arg His Tyr Glu Asp Met Val Val Asp Glu Cys  
20 25 30

Gly Cys Gly  
35

<210> 15  
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<213> Homo sapiens

<220>  
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Val Pro Thr Arg Leu Ser Pro Ile Ser Ile Leu Phe Ile Asp Ser Ala  
1 5 10 15

Asn Asn Val Val Tyr Lys Gln Tyr Glu Asp Met Val Val Glu Ser Cys  
20 25 30

Gly Cys Arg  
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<210> 16  
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<220>  
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<400> 16

Val Pro Thr Lys Leu Thr Pro Ile Ser Ile Leu Tyr Ile Asp Ala Gly  
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Asn Asn Val Val Tyr Lys Gln Tyr Glu Asp Met Val Val Glu Ser Cys  
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Gly Cys Arg  
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<400> 17

Val Pro Ala Arg Leu Ser Pro Ile Ser Ile Leu Tyr Ile Asp Ala Ala  
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Gly Cys Arg  
35

<210> 18  
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<400> 18

Val Pro Gly Lys Tyr Ser Pro Leu Ser Val Leu Thr Ile Glu Pro Asp  
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Gly Ser Ile Ala Tyr Lys Glu Tyr Glu Asp Met Ile Ala Thr Arg Cys  
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Thr Cys Arg  
35

<210> 19  
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Arg Pro Ile Ala Phe Asp Asp Asp Leu Ser Phe Leu Asp Asp Asn Leu  
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Val Tyr His Ile Leu Arg Lys His Ser Ala Lys Arg Cys Gly Cys Ile  
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<210> 20

<211> 38

<212> PRT

<213> Homo sapiens

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<223> Inhibin Alpha

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Ala Ala Leu Pro Gly Thr Met Arg Pro Leu His Val Arg Thr Thr Ser  
1 5 10 15

Asp Gly Gly Tyr Ser Phe Lys Tyr Glu Thr Val Pro Asn Leu Leu Thr  
20 25 30

Gln His Cys Ala Cys Ile  
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<210> 21

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<213> Homo sapiens

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<223> Inhibin BetaA

<400> 21

Val Pro Thr Lys Leu Arg Pro Met Ser Met Leu Tyr Tyr Asp Asp Gly  
1 5 10 15

Gln Asn Ile Ile Lys Lys Asp Ile Gln Asn Met Ile Val Glu Glu Cys  
20 25 30

Gly Cys Ser  
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<210> 22

<211> 35

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<213> Homo sapiens



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 Ile Pro Thr Lys Leu Ser Thr Met Ser Met Leu Tyr Phe Asp Asp Glu  
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 Tyr Asn Ile Val Lys Arg Asp Val Pro Asn Met Ile Val Glu Glu Cys  
 20 25 30  
 Gly Cys Ala  
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<220>  
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 Val Pro Thr Ala Arg Arg Pro Leu Ser Leu Leu Tyr Tyr Asp Arg Asp  
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 Ser Asn Ile Val Lys Thr Asp Ile Pro Asp Met Val Val Glu Ala Cys  
 20 25 30

Gly Cys Ser  
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<210> 24  
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<220>  
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 Val Pro Thr Ala Tyr Ala Gly Lys Leu Leu Ile Ser Leu Ser Glu Glu  
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 Arg Ile Ser Ala His His Val Pro Asn Met Val Ala Thr Glu Cys Gly  
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Cys Arg

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<400> 25

Ala Pro Val Lys Thr Lys Pro Leu Ser Met Leu Tyr Val Asp Asn Gly  
1 5 10 15

Arg Val Leu Leu Glu His His Lys Asp Met Ile Val Glu Glu Cys Gly  
20 25 30

Cys Leu

<210> 26  
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<400> 26

Ala Pro Thr Lys Leu Ser Ala Thr Ser Val Leu Tyr Tyr Asp Ser Ser  
1 5 10 15

Asn Asn Val Ile Leu Arg Lys His Arg Asn Met Val Val Lys Ala Cys  
20 25 30

Gly Cys His  
35

<210> 27  
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<212> PRT  
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<220>  
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<400> 27

Val Pro Thr Glu Leu Ser Ala Ile Ser Leu Leu Tyr Tyr Asp Arg Asn  
1 5 10 15

Asn Asn Val Ile Leu Arg Arg Glu Arg Asn Met Val Val Gln Ala Cys

20

25

30

Gly Cys His  
35

<210> 28  
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<213> Drosophila melanogaster

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<400> 28

Val Pro Thr Val Leu Gly Ala Ile Thr Ile Leu Arg Tyr Leu Asn Glu  
1 5 10 15

Asp Ile Ile Asp Leu Thr Lys Tyr Gln Lys Ala Val Ala Lys Glu Cys  
20 25 30

Gly Cys His  
35

<210> 29  
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<220>  
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Val Pro Gln Ala Leu Glu Pro Leu Pro Ile Val Tyr Tyr Val Gly Arg  
1 5 10 15

Lys Pro Lys Val Glu Gln Leu Ser Asn Met Ile Val Arg Ser Cys Lys  
20 25 30

Cys Ser

<210> 30  
<211> 34  
<212> PRT  
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<220>  
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<400> 30

Val Ser Gln Asp Leu Glu Pro Leu Thr Ile Leu Tyr Tyr Ile Gly Lys  
1 5 10 15

Thr Pro Lys Ile Glu Gln Leu Ser Asn Met Ile Val Lys Ser Cys Lys  
20 25 30

Cys Ser

<210> 31  
<211> 34  
<212> PRT  
<213> Homo sapiens

<220>  
<223> TGF-Beta3

<400> 31

Val Pro Gln Asp Leu Glu Pro Leu Thr Ile Leu Tyr Tyr Val Gly Arg  
1 5 10 15

Thr Pro Lys Val Glu Gln Leu Ser Asn Met Val Val Lys Ser Cys Lys  
20 25 30

Cys Ser

<210> 32  
<211> 34  
<212> PRT  
<213> Gallus gallus

<220>  
<223> TGF-Beta4

<400> 32

Val Pro Gln Thr Leu Asp Pro Leu Pro Ile Ile Tyr Tyr Val Gly Arg  
1 5 10 15

Asn Val Arg Val Glu Gln Leu Ser Asn Met Val Val Arg Ala Cys Lys  
20 25 30

Cys Ser

<210> 33  
<211> 34  
<212> PRT

<213> Xenopus laevis

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<223> TGF-Beta5

<400> 33

Val Pro Asp Val Leu Glu Pro Leu Pro Ile Ile Tyr Tyr Val Gly Arg  
1 5 10 15

Thr Ala Lys Val Glu Gln Leu Ser Asn Met Val Val Arg Ser Cys Asn  
20 25 30

Cys Ser

<210> 34

<211> 35

<212> PRT

<213> Strongylocentrotus purpuratus

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<223> UNIVIN

<400> 34

Ala Pro Thr Lys Leu Ser Gly Ile Ser Met Leu Tyr Phe Asp Asn Asn  
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Glu Asn Val Val Leu Arg Gln Tyr Glu Asp Met Val Val Glu Ala Cys  
20 25 30

Gly Cys Arg  
35

<210> 35

<211> 35

<212> PRT

<213> Xenopus laevis

<220>

<223> VG-1

<400> 35

Val Pro Thr Lys Met Ser Pro Ile Ser Met Leu Phe Tyr Asp Asn Asn  
1 5 10 15

Asp Asn Val Val Leu Arg His Tyr Glu Asn Met Ala Val Asp Glu Cys  
20 25 30

Gly Cys Arg

<210> 36  
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 <222> (1)..(21)

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 Met Ser Thr Gly Ser Lys Gln  
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<210> 37  
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 <213> Artificial Sequence

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 <223> Description of Artificial Sequence: amino acids encoded by  
 synthetic primer

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<210> 38  
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 Met His Val  
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cgc tca ctg cga gct gcg gcg ccg cac agc ttc gtg gcg ctc tgg gca 105  
 Arg Ser Leu Arg Ala Ala Pro His Ser Phe Val Ala Leu Trp Ala  
 5 10 15

ccc ctg ttc ctg ctg cgc tcc gcc ctg gcc gac ttc agc ctg gac aac 153  
 Pro Leu Phe Leu Leu Arg Ser Ala Leu Ala Asp Phe Ser Leu Asp Asn  
 20 25 30 35

gag gtg cac tcg agc ttc atc cac cgg cgc ctc cgc agc cag gag cgg	201
Glu Val His Ser Ser Phe Ile His Arg Arg Leu Arg Ser Gln Glu Arg	
40 45 50	
cgg gag atg cag cgc gag atc ctc tcc att ttg ggc ttg ccc cac cgc	249
Arg Glu Met Gln Arg Glu Ile Leu Ser Ile Leu Gly Leu Pro His Arg	
55 60 65	
ccg cgc ccg cac ctc cag ggc aag cac aac tcg gca ccc atg ttc atg	297
Pro Arg Pro His Leu Gln Gly Lys His Asn Ser Ala Pro Met Phe Met	
70 75 80	
ctg gac ctg tac aac gcc atg gcg gtg gag gag ggc ggc ggg ccc ggc	345
Leu Asp Leu Tyr Asn Ala Met Ala Val Glu Glu Gly Gly Gly Pro Gly	
85 90 95	
ggc cag ggc ttc tcc tac ccc tac aag gcc gtc ttc agt acc cag ggc	393
Gly Gln Gly Phe Ser Tyr Pro Tyr Lys Ala Val Phe Ser Thr Gln Gly	
100 105 110 115	
ccc cct ctg gcc agc ctg caa gat agc cat ttc ctc acc gac gcc gac	441
Pro Pro Leu Ala Ser Leu Gln Asp Ser His Phe Leu Thr Asp Ala Asp	
120 125 130	
atg gtc atg agc ttc gtc aac ctc gtg gaa cat gac aag gaa ttc ttc	489
Met Val Met Ser Phe Val Asn Leu Val Glu His Asp Lys Glu Phe Phe	
135 140 145	
cac cca cgc tac cac cat cga gag ttc cgg ttt gat ctt tcc aag atc	537
His Pro Arg Tyr His His Arg Glu Phe Arg Phe Asp Leu Ser Lys Ile	
150 155 160	
cca gaa ggg gaa gct gtc acg gca gcc gaa ttc cgg atc tac aag gac	585
Pro Glu Gly Glu Ala Val Thr Ala Ala Glu Phe Arg Ile Tyr Lys Asp	
165 170 175	
tac atc cgg gaa cgc ttc gac aat gag acg ttc cgg atc agc gtt tat	633
Tyr Ile Arg Glu Arg Phe Asp Asn Glu Thr Phe Arg Ile Ser Val Tyr	
180 185 190 195	
cag gtg ctc cag gag cac ttg ggc agg gaa tcg gat ctc ttc ctg ctc	681
Gln Val Leu Gln Glu His Leu Gly Arg Glu Ser Asp Leu Phe Leu Leu	
200 205 210	
gac agc cgt acc ctc tgg gcc tcg gag gag ggc tgg ctg gtg ttt gac	729
Asp Ser Arg Thr Leu Trp Ala Ser Glu Glu Gly Trp Leu Val Phe Asp	
215 220 225	
atc aca gcc acc agc aac cac tgg gtg gtc aat ccg cgg cac aac ctg	777
Ile Thr Ala Thr Ser Asn His Trp Val Val Asn Pro Arg His Asn Leu	
230 235 240	
ggc ctg cag ctc tcg gtg gag acg ctg gat ggg cag agc atc aac ccc	825
Gly Leu Gln Leu Ser Val Glu Thr Leu Asp Gly Gln Ser Ile Asn Pro	
245 250 255	
aag ttg gcg ggc ctg att ggg cgg cac ggg ccc cag aac aag cag ccc	873
Lys Leu Ala Gly Leu Ile Gly Arg His Gly Pro Gln Asn Lys Gln Pro	
260 265 270 275	

ttc atg gtg gct ttc ttc aag gcc acg gag gtc cac ttc cgc agc atc	921
Phe Met Val Ala Phe Phe Lys Ala Thr Glu Val His Phe Arg Ser Ile	
280 285 290	
cgg tcc acg ggg agc aaa cag cgc agc cag aac cgc tcc aag acg ccc	969
Arg Ser Thr Gly Ser Lys Gln Arg Ser Gln Asn Arg Ser Lys Thr Pro	
295 300 305	
aag aac cag gaa gcc ctg cgg atg gcc aac gtg gca gag aac agc agc	1017
Lys Asn Gln Glu Ala Leu Arg Met Ala Asn Val Ala Glu Asn Ser Ser	
310 315 320	
agc gac cag agg cag gcc tgt aag aag cac gag ctg tat gtc agc ttc	1065
Ser Asp Gln Arg Gln Ala Cys Lys Lys His Glu Leu Tyr Val Ser Phe	
325 330 335	
cga gac ctg ggc tgg cag gac tgg atc atc gcg cct gaa ggc tac gcc	1113
Arg Asp Leu Gly Trp Gln Asp Trp Ile Ile Ala Pro Glu Gly Tyr Ala	
340 345 350 355	
gcc tac tac tgt gag ggg gag tgt gcc ttc cct ctg aac tcc tac atg	1161
Ala Tyr Tyr Cys Glu Gly Glu Cys Ala Phe Pro Leu Asn Ser Tyr Met	
360 365 370	
aac gcc acc aac cac gcc atc gtg cag acg ctg gtc cac ttc atc aac	1209
Asn Ala Thr Asn His Ala Ile Val Gln Thr Leu Val His Phe Ile Asn	
375 380 385	
ccg gaa acg gtg ccc aag ccc tgc tgt gcg ccc acg cag ctc aat gcc	1257
Pro Glu Thr Val Pro Lys Pro Cys Cys Ala Pro Thr Gln Leu Asn Ala	
390 395 400	
atc tcc gtc ctc tac ttc gat gac agc tcc aac gtc atc ctg aag aaa	1305
Ile Ser Val Leu Tyr Phe Asp Asp Ser Ser Asn Val Ile Leu Lys Lys	
405 410 415	
tac aga aac atg gtg gtc cgg gcc tgt ggc tgc cac tagctcctcc	1351
Tyr Arg Asn Met Val Val Arg Ala Cys Gly Cys His	
420 425 430	
gagaattcag acccttttggg gccaaagtttt tctggatcct ccattgctcg ccttggccag 1411	
gaaccagcag accaactgcc ttttgtgaga ccttcccctc cctatcccca acttttaaagg 1471	
tgtgagagta ttaggaaaca tgagcagcat atggcttttg atcagttttt cagtggcagc 1531	
atccaatgaa caagatccta caagctgtgc aggcaaaacc tagcaggaaa aaaaaacaac 1591	
gcataaagaa aaatggccgg gccaggcat tggctgggaa gtctcagcca tgcacggact 1651	
cgtttccaga ggtaattatg agcgcctacc agccaggcca cccagccgtg ggaggaaggg 1711	
ggcgtggcaa ggggtgggca cattggtgtc tgtgcgaaag gaaaattgac ccggaagttc 1771	
ctgtaataaa tgtcacaata aaacgaatga atgaaaaaaaa aaaaaaaaaa a 1822	

<210> 39  
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 <212> PRT



<213> Homo sapiens

<220>

<223> Morphogenic protein OP1

<400> 39

Met His Val Arg Ser Leu Arg Ala Ala Ala Pro His Ser Phe Val Ala  
1 5 10 15

Leu Trp Ala Pro Leu Phe Leu Leu Arg Ser Ala Leu Ala Asp Phe Ser  
20 25 30

Leu Asp Asn Glu Val His Ser Ser Phe Ile His Arg Arg Leu Arg Ser  
35 40 45

Gln Glu Arg Arg Glu Met Gln Arg Glu Ile Leu Ser Ile Leu Gly Leu  
50 55 60

Pro His Arg Pro Arg Pro His Leu Gln Gly Lys His Asn Ser Ala Pro  
65 70 75 80

Met Phe Met Leu Asp Leu Tyr Asn Ala Met Ala Val Glu Glu Gly Gly  
85 90 95

Gly Pro Gly Gly Gln Gly Phe Ser Tyr Pro Tyr Lys Ala Val Phe Ser  
100 105 110

Thr Gln Gly Pro Pro Leu Ala Ser Leu Gln Asp Ser His Phe Leu Thr  
115 120 125

Asp Ala Asp Met Val Met Ser Phe Val Asn Leu Val Glu His Asp Lys  
130 135 140

Glu Phe Phe His Pro Arg Tyr His His Arg Glu Phe Arg Phe Asp Leu  
145 150 155 160

Ser Lys Ile Pro Glu Gly Glu Ala Val Thr Ala Ala Glu Phe Arg Ile  
165 170 175

Tyr Lys Asp Tyr Ile Arg Glu Arg Phe Asp Asn Glu Thr Phe Arg Ile  
180 185 190

Ser Val Tyr Gln Val Leu Gln Glu His Leu Gly Arg Glu Ser Asp Leu  
195 200 205

Phe Leu Leu Asp Ser Arg Thr Leu Trp Ala Ser Glu Glu Gly Trp Leu

210	215	220
Val Phe Asp Ile Thr Ala Thr Ser Asn His Trp Val Val Asn Pro Arg		
225	230	235 240
His Asn Leu Gly Leu Gln Leu Ser Val Glu Thr Leu Asp Gly Gln Ser		
	245	250 255
Ile Asn Pro Lys Leu Ala Gly Leu Ile Gly Arg His Gly Pro Gln Asn		
	260	265 270
Lys Gln Pro Phe Met Val Ala Phe Phe Lys Ala Thr Glu Val His Phe		
	275	280 285
Arg Ser Ile Arg Ser Thr Gly Ser Lys Gln Arg Ser Gln Asn Arg Ser		
	290	295 300
Lys Thr Pro Lys Asn Gln Glu Ala Leu Arg Met Ala Asn Val Ala Glu		
305	310	315 320
Asn Ser Ser Ser Asp Gln Arg Gln Ala Cys Lys Lys His Glu Leu Tyr		
	325	330 335
Val Ser Phe Arg Asp Leu Gly Trp Gln Asp Trp Ile Ile Ala Pro Glu		
	340	345 350
Gly Tyr Ala Ala Tyr Tyr Cys Glu Gly Glu Cys Ala Phe Pro Leu Asn		
	355	360 365
Ser Tyr Met Asn Ala Thr Asn His Ala Ile Val Gln Thr Leu Val His		
	370	375 380
Phe Ile Asn Pro Glu Thr Val Pro Lys Pro Cys Cys Ala Pro Thr Gln		
385	390	395 400
Leu Asn Ala Ile Ser Val Leu Tyr Phe Asp Asp Ser Ser Asn Val Ile		
	405	410 415
Leu Lys Lys Tyr Arg Asn Met Val Val Arg Ala Cys Gly Cys His		
	420	425 430

<210> 40  
 <211> 98  
 <212> PRT  
 <213> Homo sapiens

<220>

<223> TGF-Betal

<400> 40

Cys Cys Val Arg Gln Leu Tyr Ile Asp Phe Arg Lys Asp Leu Gly Trp  
1 5 10 15

Lys Trp Ile His Glu Pro Lys Gly Tyr His Ala Asn Phe Cys Leu Gly  
20 25 30

Pro Cys Pro Tyr Ile Trp Ser Leu Asp Thr Gln Tyr Ser Lys Val Leu  
35 40 45

Ala Leu Tyr Asn Gln His Asn Pro Gly Ala Ser Ala Ala Pro Cys Cys  
50 55 60

Val Pro Gln Ala Leu Glu Pro Leu Pro Ile Val Tyr Tyr Val Gly Arg  
65 70 75 80

Lys Pro Lys Val Glu Gln Leu Ser Asn Met Ile Val Arg Ser Cys Lys  
85 90 95

Cys Ser

<210> 41

<211> 98

<212> PRT

<213> Homo sapiens

<220>

<223> TGF-Beta2

<400> 41

Cys Cys Leu Arg Pro Leu Tyr Ile Asp Phe Lys Arg Asp Leu Gly Trp  
1 5 10 15

Lys Trp Ile His Glu Pro Lys Gly Tyr Asn Ala Asn Phe Cys Ala Gly  
20 25 30

Ala Cys Pro Tyr Leu Trp Ser Ser Asp Thr Gln His Ser Arg Val Leu  
35 40 45

Ser Leu Tyr Asn Thr Ile Asn Pro Glu Ala Ser Ala Ser Pro Cys Cys  
50 55 60

Val Ser Gln Asp Leu Glu Pro Leu Thr Ile Leu Tyr Tyr Ile Gly Lys

65		70		75		80									
Thr	Pro	Lys	Ile	Glu	Gln	Leu	Ser	Asn	Met	Ile	Val	Lys	Ser	Cys	Lys
				85					90					95	

Cys Ser

<210> 42  
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<220>  
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<400> 42

Cys	Cys	Val	Arg	Pro	Leu	Tyr	Ile	Asp	Phe	Arg	Gln	Asp	Leu	Gly	Trp
1				5					10					15	

Lys	Trp	Val	His	Glu	Pro	Lys	Gly	Tyr	Tyr	Ala	Asn	Phe	Cys	Ser	Gly
			20					25					30		

Pro	Cys	Pro	Tyr	Leu	Arg	Ser	Ala	Asp	Thr	Thr	His	Ser	Thr	Val	Leu
		35					40					45			

Gly	Leu	Tyr	Asn	Thr	Leu	Asn	Pro	Glu	Ala	Ser	Ala	Ser	Pro	Cys	Cys
	50					55					60				

Val	Pro	Gln	Asp	Leu	Glu	Pro	Leu	Thr	Ile	Leu	Tyr	Tyr	Val	Gly	Arg
65					70					75					80

Thr	Pro	Lys	Val	Glu	Gln	Leu	Ser	Asn	Met	Val	Val	Lys	Ser	Cys	Lys
				85					90					95	

Cys Ser

<210> 43  
 <211> 98  
 <212> PRT  
 <213> Gallus gallus

<220>  
 <223> TGF-Beta4

<400> 43

Cys	Cys	Val	Arg	Pro	Leu	Tyr	Ile	Asp	Phe	Arg	Lys	Asp	Leu	Gln	Trp
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

1                      5                      10                      15  
 Lys Trp Ile His Glu Pro Lys Gly Tyr Met Ala Asn Phe Cys Met Gly  
                     20                      25                      30  
 Pro Cys Pro Tyr Ile Trp Ser Ala Asp Thr Gln Tyr Thr Lys Val Leu  
                     35                      40                      45  
 Ala Leu Tyr Asn Gln His Asn Pro Gly Ala Ser Ala Ala Pro Cys Cys  
                     50                      55                      60  
 Val Pro Gln Thr Leu Asp Pro Leu Pro Ile Ile Tyr Tyr Val Gly Arg  
 65                      70                      75                      80  
 Asn Val Arg Val Glu Gln Leu Ser Asn Met Val Val Arg Ala Cys Lys  
                     85                      90                      95

Cys Ser

<210> 44  
 <211> 98  
 <212> PRT  
 <213> Xenopus laevis

<220>  
 <223> TGF-Beta5

<400> 44

Cys Cys Val Lys Pro Leu Tyr Ile Asn Phe Arg Lys Asp Leu Gly Trp  
 1                      5                      10                      15  
 Lys Trp Ile His Glu Pro Lys Gly Tyr Glu Ala Asn Tyr Cys Leu Gly  
                     20                      25                      30  
 Asn Cys Pro Tyr Ile Trp Ser Met Asp Thr Gln Tyr Ser Lys Val Leu  
                     35                      40                      45  
 Ser Leu Tyr Asn Gln Asn Asn Pro Gly Ala Ser Ile Ser Pro Cys Cys  
                     50                      55                      60  
 Val Pro Asp Val Leu Glu Pro Leu Pro Ile Ile Tyr Tyr Val Gly Arg  
 65                      70                      75                      80  
 Thr Ala Lys Val Glu Gln Leu Ser Asn Met Val Val Arg Ser Cys Asn  
                     85                      90                      95

Cys Ser

<210> 45  
<211> 102  
<212> PRT  
<213> Drosophila melanogaster

<220>  
<223> DPP

<400> 45

Cys Arg Arg His Ser Leu Tyr Val Asp Phe Ser Asp Val Gly Trp Asp  
1 5 10 15

Asp Trp Ile Val Ala Pro Leu Gly Tyr Asp Ala Tyr Tyr Cys His Gly  
20 25 30

Lys Cys Pro Phe Pro Leu Ala Asp His Phe Asn Ser Thr Asn His Ala  
35 40 45

Val Val Gln Thr Leu Val Asn Asn Met Asn Pro Gly Lys Val Pro Lys  
50 55 60

Ala Cys Cys Val Pro Thr Gln Leu Asp Ser Val Ala Met Leu Tyr Leu  
65 70 75 80

Asn Asp Gln Ser Thr Val Val Leu Lys Asn Tyr Gln Glu Met Thr Val  
85 90 95

Val Gly Cys Gly Cys Arg  
100

<210> 46  
<211> 102  
<212> PRT  
<213> Xenopus laevis

<220>  
<223> VG1

<400> 46

Cys Lys Lys Arg His Leu Tyr Val Glu Phe Lys Asp Val Gly Trp Gln  
1 5 10 15

Asn Trp Val Ile Ala Pro Gln Gly Tyr Met Ala Asn Tyr Cys Tyr Gly  
20 25 30

Glu Cys Pro Tyr Pro Leu Thr Glu Ile Leu Asn Gly Ser Asn His Ala  
 35 40 45

Ile Leu Gln Thr Leu Val His Ser Ile Glu Pro Glu Asp Ile Pro Leu  
 50 55 60

Pro Cys Cys Val Pro Thr Lys Met Ser Pro Ile Ser Met Leu Phe Tyr  
 65 70 75 80

Asp Asn Asn Asp Asn Val Val Leu Arg His Tyr Glu Asn Met Ala Val  
 85 90 95

Asp Glu Cys Gly Cys Arg  
 100

<210> 47  
 <211> 102  
 <212> PRT  
 <213> Mus musculus

<220>  
 <223> VGR1

<400> 47

Cys Lys Lys His Glu Leu Tyr Val Ser Phe Gln Asp Leu Gly Trp Gln  
 1 5 10 15

Asp Trp Ile Ile Ala Pro Lys Gly Tyr Ala Ala Asn Tyr Cys Asp Gly  
 20 25 30

Glu Cys Ser Phe Pro Leu Asn Ala His Met Asn Ala Thr Asn His Ala  
 35 40 45

Ile Val Gln Thr Leu Val His Leu Met Asn Pro Glu Tyr Val Pro Lys  
 50 55 60

Pro Cys Cys Ala Pro Thr Lys Leu Asn Ala Ile Ser Val Leu Tyr Phe  
 65 70 75 80

Asp Asp Asn Ser Asn Val Ile Leu Lys Lys Tyr Arg Asn Met Val Val  
 85 90 95

Arg Ala Cys Gly Cys His  
 100

<210> 48

<211> 118  
<212> PRT  
<213> Drosophila melanogaster

<220>  
<223> 60A

<400> 48

Cys Gln Met Gln Thr Leu Tyr Ile Asp Phe Lys Asp Leu Gly Trp His  
1 5 10 15

Asp Trp Ile Ile Ala Pro Glu Gly Tyr Gly Ala Phe Tyr Cys Ser Gly  
20 25 30

Glu Cys Asn Phe Pro Leu Asn Ala His Met Asn Ala Thr Asn His Ala  
35 40 45

Ile Val Gln Thr Leu Val His Leu Leu Glu Pro Lys Lys Val Pro Lys  
50 55 60

Pro Cys Cys Ala Pro Thr Arg Leu Gly Ala Leu Pro Val Leu Tyr His  
65 70 75 80

Pro Cys Cys Ala Pro Thr Arg Leu Gly Ala Leu Pro Val Leu Tyr His  
85 90 95

Leu Asn Asp Glu Asn Val Asn Leu Lys Lys Tyr Arg Asn Met Ile Val  
100 105 110

Lys Ser Cys Gly Cys His  
115

<210> 49  
<211> 101  
<212> PRT  
<213> Homo sapiens

<220>  
<223> BMP-2A

<400> 49

Cys Lys Arg His Pro Leu Tyr Val Asp Phe Ser Asp Val Gly Trp Asn  
1 5 10 15

Asp Trp Ile Val Ala Pro Pro Gly Tyr His Ala Phe Tyr Cys His Gly  
20 25 30

Glu Cys Pro Phe Pro Leu Ala Asp His Leu Asn Ser Thr Asn His Ala



35                                      40                                      45  
 Ile Val Gln Thr Leu Val Asn Ser Val Asn Ser Lys Ile Pro Lys Ala  
     50                                      55                                      60  
 Cys Cys Val Pro Thr Glu Leu Ser Ala Ile Ser Met Leu Tyr Leu Asp  
     65                                      70                                      75                                      80  
 Glu Asn Glu Lys Val Val Leu Lys Asn Tyr Gln Asp Met Val Val Glu  
                                     85                                      90                                      95  
 Gly Cys Gly Cys Arg  
                                     100

<210> 50  
 <211> 103  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> BMP3

<400> 50

Cys Ala Arg Arg Tyr Leu Lys Val Asp Phe Ala Asp Ile Gly Trp Ser  
     1                                      5                                      10                                      15  
 Glu Trp Ile Ile Ser Pro Lys Ser Phe Asp Ala Tyr Tyr Cys Ser Gly  
                                     20                                      25                                      30  
 Ala Cys Gln Phe Pro Met Pro Lys Ser Leu Lys Pro Ser Asn His Ala  
                                     35                                      40                                      45  
 Thr Ile Gln Ser Ile Val Arg Ala Val Gly Val Val Pro Gly Ile Pro  
     50                                      55                                      60  
 Glu Pro Cys Cys Val Pro Glu Lys Met Ser Ser Leu Ser Ile Leu Phe  
     65                                      70                                      75                                      80  
 Phe Asp Glu Asn Lys Asn Val Val Leu Lys Val Tyr Pro Asn Met Thr  
                                     85                                      90                                      95  
 Val Glu Ser Cys Ala Cys Arg  
                                     100

<210> 51  
 <211> 101  
 <212> PRT

<213> Homo sapiens

<220>

<223> BMP-4

<400> 51

Cys Arg Arg His Ser Leu Tyr Val Asp Phe Ser Asp Val Gly Trp Asn  
1 5 10 15

Asp Trp Ile Val Ala Pro Pro Gly Tyr Gln Ala Phe Tyr Cys His Gly  
20 25 30

Asp Cys Pro Phe Pro Leu Ala Asp His Leu Asn Ser Thr Asn His Ala  
35 40 45

Ile Val Gln Thr Leu Val Asn Ser Val Asn Ser Ser Ile Pro Lys Ala  
50 55 60

Cys Cys Val Pro Thr Glu Leu Ser Ala Ile Ser Met Leu Tyr Leu Asp  
65 70 75 80

Glu Tyr Asp Lys Val Val Leu Lys Asn Tyr Gln Glu Met Val Val Glu  
85 90 95

Gly Cys Gly Cys Arg  
100

<210> 52

<211> 102

<212> PRT

<213> Homo sapiens

<220>

<223> BMP-5

<400> 52

Cys Lys Lys His Glu Leu Tyr Val Ser Phe Arg Asp Leu Gly Trp Gln  
1 5 10 15

Asp Trp Ile Ile Ala Pro Glu Gly Tyr Ala Ala Phe Tyr Cys Asp Gly  
20 25 30

Glu Cys Ser Phe Pro Leu Asn Ala His Met Asn Ala Thr Asn His Ala  
35 40 45

Ile Val Gln Thr Leu Val His Leu Met Phe Pro Asp His Val Pro Lys  
50 55 60

Pro Cys Cys Ala Pro Thr Lys Leu Asn Ala Ile Ser Val Leu Tyr Phe  
65 70 75 80

Asp Asp Ser Ser Asn Val Ile Leu Lys Lys Tyr Arg Asn Met Val Val  
85 90 95

Arg Ser Cys Gly Cys His  
100

<210> 53  
<211> 102  
<212> PRT  
<213> Homo sapiens

<220>  
<223> BMP-6

<400> 53

Cys Arg Lys His Glu Leu Tyr Val Ser Phe Gln Asp Leu Gly Trp Gln  
1 5 10 15

Asp Trp Ile Ile Ala Pro Lys Gly Tyr Ala Ala Asn Tyr Cys Asp Gly  
20 25 30

Glu Cys Ser Phe Pro Leu Asn Ala His Met Asn Ala Thr Asn His Ala  
35 40 45

Ile Val Gln Thr Leu Val His Leu Met Asn Pro Glu Tyr Val Pro Lys  
50 55 60

Pro Cys Cys Ala Pro Thr Lys Leu Asn Ala Ile Ser Val Leu Tyr Phe  
65 70 75 80

Asp Asp Asn Ser Asn Val Glu Leu Lys Lys Tyr Arg Asn Met Val Val  
85 90 95

Arg Ala Cys Gly Cys His  
100

<210> 54  
<211> 103  
<212> PRT  
<213> Gallus gallus

<220>  
<223> DORSALIN

<400> 54

Cys Arg Arg Thr Ser Leu His Val Asn Phe Lys Glu Ile Gly Trp Asp  
 1 5 10 15

Ser Trp Ile Ile Ala Pro Lys Asp Tyr Glu Ala Phe Glu Cys Lys Gly  
 20 25 30

Gly Cys Phe Phe Pro Leu Thr Asp Asn Val Thr Pro Thr Lys His Ala  
 35 40 45

Ile Val Gln Thr Leu Val His Leu Gln Asn Pro Lys Lys Ala Ser Lys  
 50 55 60

Ala Cys Cys Val Pro Thr Lys Leu Asp Ala Ile Ser Ile Leu Tyr Lys  
 65 70 75 80

Asp Asp Ala Gly Val Pro Thr Leu Ile Tyr Asn Tyr Glu Gly Met Lys  
 85 90 95

Val Ala Glu Cys Gly Cys Arg  
 100

<210> 55  
 <211> 102  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> OP-1

<400> 55

Cys Lys Lys His Glu Leu Tyr Val Ser Phe Arg Asp Leu Gly Trp Gln  
 1 5 10 15

Asp Trp Ile Ile Ala Pro Glu Gly Tyr Ala Ala Tyr Tyr Cys Glu Gly  
 20 25 30

Glu Cys Ala Phe Pro Leu Asn Ser Tyr Met Asn Ala Thr Asn His Ala  
 35 40 45

Ile Val Gln Thr Leu Val His Phe Ile Asn Pro Glu Thr Val Pro Lys  
 50 55 60

Pro Cys Cys Ala Pro Thr Gln Leu Asn Ala Ile Ser Val Leu Tyr Phe  
 65 70 75 80

Asp Asp Ser Ser Asn Val Ile Leu Lys Lys Tyr Arg Asn Met Val Val

85

90

95

Arg Ala Cys Gly Cys His  
100

<210> 56  
<211> 102  
<212> PRT  
<213> Homo sapiens

<220>  
<223> OP-2

<400> 56

Cys Arg Arg His Glu Leu Tyr Val Ser Phe Gln Asp Leu Gly Trp Leu  
1 5 10 15

Asp Trp Val Ile Ala Pro Gln Gly Tyr Ser Ala Tyr Tyr Cys Glu Gly  
20 25 30

Glu Cys Ser Phe Pro Leu Asp Ser Cys Met Asn Ala Thr Asn His Ala  
35 40 45

Ile Leu Gln Ser Leu Val His Leu Met Lys Pro Asn Ala Val Pro Lys  
50 55 60

Ala Cys Cys Ala Pro Thr Lys Leu Ser Ala Thr Ser Val Leu Tyr Tyr  
65 70 75 80

Asp Ser Ser Asn Asn Val Ile Leu Arg Lys His Arg Asn Met Val Val  
85 90 95

Lys Ala Cys Gly Cys His  
100

<210> 57  
<211> 102  
<212> PRT  
<213> Mus musculus

<220>  
<223> OP-3

<400> 57

Cys Arg Arg His Glu Leu Tyr Val Ser Phe Arg Asp Leu Gly Trp Leu  
1 5 10 15

Asp Ser Val Ile Ala Pro Gln Gly Tyr Ser Ala Tyr Tyr Cys Ala Gly

	20		25		30														
Glu	Cys	Ile	Tyr	Pro	Leu	Asn	Ser	Cys	Met	Asn	Ser	Thr	Asn	His	Ala				
	35						40					45							
Thr	Met	Gln	Ala	Leu	Val	His	Leu	Met	Lys	Pro	Asp	Ile	Ile	Pro	Lys				
	50					55					60								
Val	Cys	Cys	Val	Pro	Thr	Glu	Leu	Ser	Ala	Ile	Ser	Leu	Leu	Tyr	Tyr				
65					70					75					80				
Asp	Arg	Asn	Asn	Asn	Val	Ile	Leu	Arg	Arg	Glu	Arg	Asn	Met	Val	Val				
				85					90					95					
Gln	Ala	Cys	Gly	Cys	His														
			100																
<210>	58																		
<211>	107																		
<212>	PRT																		
<213>	Mus musculus																		
<220>																			
<223>	GDF-1																		
<400>	58																		
Cys	Arg	Thr	Arg	Arg	Leu	His	Val	Ser	Phe	Arg	Glu	Val	Gly	Trp	His				
1				5					10					15					
Arg	Trp	Val	Ile	Ala	Pro	Arg	Gly	Phe	Leu	Ala	Asn	Phe	Cys	Gln	Gly				
		20						25					30						
Thr	Cys	Ala	Leu	Pro	Glu	Thr	Leu	Arg	Gly	Pro	Gly	Gly	Pro	Pro	Ala				
	35						40					45							
Leu	Asn	His	Ala	Val	Leu	Arg	Ala	Leu	Met	His	Ala	Ala	Ala	Pro	Thr				
	50					55					60								
Pro	Gly	Ala	Gly	Ser	Pro	Cys	Cys	Val	Pro	Glu	Arg	Leu	Ser	Pro	Ile				
65					70					75				80					
Ser	Val	Leu	Phe	Phe	Asp	Asn	Ser	Asp	Asn	Val	Val	Leu	Arg	His	Tyr				
				85					90					95					
Glu	Asp	Met	Val	Val	Asp	Glu	Cys	Gly	Cys	Arg									
			100					105											

<210> 59  
<211> 101  
<212> PRT  
<213> Mus musculus

<220>  
<223> GDF-3

<400> 59

Cys His Arg His Gln Leu Phe Ile Asn Phe Gln Asp Leu Gly Trp His  
1 5 10 15

Lys Trp Val Ile Ala Pro Lys Gly Phe Met Ala Asn Tyr Cys His Gly  
20 25 30

Glu Cys Pro Phe Ser Met Thr Thr Tyr Leu Asn Ser Ser Asn Tyr Ala  
35 40 45

Phe Met Gln Ala Leu Met His Met Ala Asp Pro Lys Val Pro Lys Ala  
50 55 60

Val Cys Val Pro Thr Lys Leu Ser Pro Ile Ser Met Leu Tyr Gln Asp  
65 70 75 80

Ser Asp Lys Asn Val Ile Leu Arg His Tyr Glu Asp Met Val Val Asp  
85 90 95

Glu Cys Gly Cys Gly  
100

<210> 60  
<211> 102  
<212> PRT  
<213> Mus musculus

<220>  
<223> GDF-9

<400> 60

Cys Glu Leu His Asp Phe Arg Leu Ser Phe Ser Gln Leu Lys Trp Asp  
1 5 10 15

Asn Trp Ile Val Ala Pro His Arg Tyr Asn Pro Arg Tyr Cys Lys Gly  
20 25 30

Asp Cys Pro Arg Ala Val Arg His Arg Tyr Gly Ser Pro Val His Thr  
35 40 45

Met Val Gln Asn Ile Ile Tyr Glu Lys Leu Asp Pro Ser Val Pro Arg  
 50 55 60

Pro Ser Cys Val Pro Gly Lys Tyr Ser Pro Leu Ser Val Leu Thr Ile  
 65 70 75 80

Glu Pro Asp Gly Ser Ile Ala Tyr Lys Glu Tyr Glu Asp Met Ile Ala  
 85 90 95

Thr Arg Cys Thr Cys Arg  
 100

<210> 61  
 <211> 105  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> INHIBIN-Alpha

<400> 61

Cys His Arg Val Ala Leu Asn Ile Ser Phe Gln Glu Leu Gly Trp Glu  
 1 5 10 15

Arg Trp Ile Val Tyr Pro Pro Ser Phe Ile Phe His Tyr Cys His Gly  
 20 25 30

Gly Cys Gly Leu His Ile Pro Pro Asn Leu Ser Leu Pro Val Pro Gly  
 35 40 45

Ala Pro Pro Thr Pro Ala Gln Pro Tyr Ser Leu Leu Pro Gly Ala Gln  
 50 55 60

Pro Cys Cys Ala Ala Leu Pro Gly Thr Met Arg Pro Leu His Val Arg  
 65 70 75 80

Thr Thr Ser Asp Gly Gly Tyr Ser Phe Lys Tyr Glu Thr Val Pro Asn  
 85 90 95

Leu Leu Thr Gln His Cys Ala Cys Ile  
 100 105

<210> 62  
 <211> 106  
 <212> PRT  
 <213> Bos taurus



<220>

<223> INHIBIN-BetaA

<400> 62

Cys Cys Lys Lys Gln Phe Phe Val Ser Phe Lys Asp Ile Gly Trp Asn  
1 5 10 15

Asp Trp Ile Ile Ala Pro Ser Gly Tyr His Ala Asn Tyr Cys Glu Gly  
20 25 30

Glu Cys Pro Ser His Ile Ala Gly Thr Ser Gly Ser Ser Leu Ser Phe  
35 40 45

His Ser Thr Val Ile Asn His Tyr Arg Met Arg Gly His Ser Pro Phe  
50 55 60

Ala Asn Leu Lys Ser Cys Cys Val Pro Thr Lys Leu Arg Pro Met Ser  
65 70 75 80

Met Leu Tyr Tyr Asp Asp Gly Gln Asn Ile Ile Lys Lys Asp Ile Gln  
85 90 95

Asn Met Ile Val Glu Glu Cys Gly Cys Ser  
100 105

<210> 63

<211> 106

<212> PRT

<213> Homo sapiens

<220>

<223> INHIBIN-Betab

<400> 63

Cys Cys Lys Lys Gln Phe Phe Val Ser Phe Lys Asp Ile Gly Trp Asn  
1 5 10 15

Asp Trp Ile Ile Ala Pro Ser Gly Tyr His Ala Asn Tyr Cys Glu Gly  
20 25 30

Glu Cys Pro Ser His Ile Ala Gly Thr Ser Gly Ser Ser Leu Ser Phe  
35 40 45

His Ser Thr Val Ile Asn His Tyr Arg Met Arg Gly His Ser Pro Phe  
50 55 60

Ala Asn Leu Lys Ser Cys Cys Val Pro Thr Lys Leu Arg Pro Met Ser

65

70

75

80

Met Leu Tyr Tyr Asp Asp Gly Gln Asn Ile Ile Lys Lys Asp Ile Gln  
                             85                            90                            95

Asn Met Ile Val Glu Glu Cys Gly Cys Ser  
                             100                            105

&lt;210&gt; 64

&lt;211&gt; 98

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence: TGF-B SUBGROUP  
 SEQUENCE PATTERN

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (12)..(12)

&lt;223&gt; Xaa12 can be Arg or Lys

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (26)..(26)

<223> Xaa26 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His,  
 Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (31)..(31)

<223> Xaa31 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His,  
 Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (33)..(33)

&lt;223&gt; Xaa33 can be Ala, Gly, Pro, Ser or Thr

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (37)..(37)

&lt;223&gt; Xaa37 can be Ile, Leu lys, Met or Val

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (40)..(40)

<223> Xaa40 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His,  
 Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (44)..(44)

&lt;223&gt; Xaa44 can be His, Phe, Trp or Tyr

&lt;220&gt;

&lt;221&gt; misc\_feature

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<222> (46)..(46)
<223> Xaa46 can be Arg or Lys

<220>
<221> misc_feature
<222> (49)..(49)
<223> Xaa49 can be Ala, Gly, Pro, Ser or Thr

<220>
<221> misc_feature
<222> (53)..(54)
<223> Xaa53 can be Arg, Asn, Asp, Gln, Glu, His, Lys, Ser or Thr;
Xaa54 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His,
Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val

<220>
<221> misc_feature
<222> (57)..(57)
<223> Xaa57 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His,
Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val

<220>
<221> misc_feature
<222> (61)..(61)
<223> Xaa61 can be Ala, Gly, Pro, Ser or Thr

<220>
<221> misc_feature
<222> (68)..(68)
<223> Xaa68 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His,
Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val

<220>
<221> misc_feature
<222> (73)..(73)
<223> Xaa73 can be Ala, Gly, Pro, Ser or Thr

<220>
<221> misc_feature
<222> (75)..(75)
<223> Xaa75 can be Ile, Leu, Met or Val

<220>
<221> misc_feature
<222> (81)..(82)
<223> Xaa81 can be Arg, Asn, Asp, Gln, Glu, His, Lys, Ser or Thr;
Xaa82 can be Ala, Gly, Pro, Ser, or Thr

<220>
<221> misc_feature
<222> (91)..(91)
<223> Xaa91 can be any Ile or Val

<220>
<221> misc_feature
<222> (93)..(93)
<223> Xaa93 can be Arg or Lys

<400> 64

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Cys Cys Val Arg Pro Leu Tyr Ile Asp Phe Arg Xaa Asp Leu Gly Trp  
 1 5 10 15

Lys Trp Ile His Glu Pro Lys Gly Tyr Xaa Ala Asn Phe Cys Xaa Gly  
 20 25 30

Xaa Cys Pro Tyr Xaa Trp Ser Xaa Asp Thr Gln Xaa Ser Xaa Val Leu  
 35 40 45

Xaa Leu Tyr Asn Xaa Xaa Asn Pro Xaa Ala Ser Ala Xaa Pro Cys Cys  
 50 55 60

Val Pro Gln Xaa Leu Glu Pro Leu Xaa Ile Xaa Tyr Tyr Val Gly Arg  
 65 70 75 80

Xaa Xaa Lys Val Glu Gln Leu Ser Asn Met Xaa Val Xaa Ser Cys Lys  
 85 90 95

Cys Ser

<210> 65  
 <211> 104  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: VG/DPP SUBGROUP  
 SEQUENCE PATTERN

<220>  
 <221> misc\_feature  
 <222> (2)..(5)  
 <223> Xaa2 can be Arg or Lys; Xaa3 can be Arg or Lys; Xaa4 and  
 Xaa5 independently can be Arg, Asn, Asp, Glu, Gln, His,  
 Lys, Ser or Thr

<220>  
 <221> misc\_feature  
 <222> (9)..(9)  
 <223> Xaa9 can be Arg, Asn, Asp, Glu, Gln, His, Lys, Ser or Thr

<220>  
 <221> misc\_feature  
 <222> (11)..(11)  
 <223> Xaa11 can be Arg, Asn, Asp, Glu, Gln, His, Lys, Ser or Thr

<220>  
 <221> misc\_feature  
 <222> (13)..(13)  
 <223> Xaa13 can be Ile, Leu, Met, or Val

<220>

<221> misc\_feature  
 <222> (16)..(16)  
 <223> Xaa16 can be Arg, Asn, Asp, Glu, Gln, His, Lys, Ser or Thr

<220>  
 <221> misc\_feature  
 <222> (23)..(23)  
 <223> Xaa23 can be Arg, Gln, Glu or Lys

<220>  
 <221> misc\_feature  
 <222> (26)..(26)  
 <223> Xaa26 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val

<220>  
 <221> misc\_feature  
 <222> (28)..(28)  
 <223> Xaa28 can be Phe, Trp or Tyr

<220>  
 <221> misc\_feature  
 <222> (31)..(31)  
 <223> Xaa31 can be Arg, Asn, Asp, Glu, Gln, His, Lys, Ser or Thr

<220>  
 <221> misc\_feature  
 <222> (33)..(33)  
 <223> Xaa33 can be Asp or Glu

<220>  
 <221> misc\_feature  
 <222> (35)..(35)  
 <223> Xaa35 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val

<220>  
 <221> misc\_feature  
 <222> (39)..(42)  
 <223> Xaa39, Xaa40 and Xaa41 independently can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val; Xaa42 can be Leu or Met

<220>  
 <221> misc\_feature  
 <222> (44)..(44)  
 <223> Xaa44 can be Ala, Gly, Pro, Ser or Thr

<220>  
 <221> misc\_feature  
 <222> (50)..(50)  
 <223> Xaa50 can be Ile or Val

<220>  
 <221> misc\_feature  
 <222> (55)..(57)  
 <223> Xaa55 can be Arg, Asn, Asp, Glu, Gln, His, Lys, Ser or Thr; Xaa56 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val; Xaa57 can be Ile, Leu, Met or Val

<220>  
 <221> misc\_feature  
 <222> (58)..(60)  
 <223> Xaa58 can be Arg, Asn, Asp, Glu, Gln, His, Lys, Ser or Thr;  
 Xaa59 and Xaa60 independently can be Ala, Arg, Asn, Asp, Cys,  
 Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr,  
 Trp, Tyr, Val or a peptide bond

<220>  
 <221> misc\_feature  
 <222> (61)..(63)  
 <223> Xaa61 can be Arg, Asn, Asp, Glu, Gln, His, Lys, Ser or Thr;  
 Xaa62 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile,  
 Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val; Xaa63  
 can be Ile or Val

<220>  
 <221> misc\_feature  
 <222> (66)..(66)  
 <223> Xaa66 can be Ala Gly, Pro, Ser or Thr

<220>  
 <221> misc\_feature  
 <222> (69)..(69)  
 <223> Xaa69 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His,  
 Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val

<220>  
 <221> misc\_feature  
 <222> (72)..(72)  
 <223> Xaa72 can be Arg, Gln, Glu or Lys

<220>  
 <221> misc\_feature  
 <222> (74)..(74)  
 <223> Xaa74 can be Arg, Asn, Asp, Glu, Gln, His, Lys, Ser or Thr

<220>  
 <221> misc\_feature  
 <222> (76)..(76)  
 <223> Xaa76 can be Ile or Val

<220>  
 <221> misc\_feature  
 <222> (78)..(78)  
 <223> Xaa78 can be Ile, Leu, Met or Val

<220>  
 <221> misc\_feature  
 <222> (81)..(81)  
 <223> Xaa81 can be Cys, Ile, Leu, Met, Phe, Trp, Tyr or Val

<220>  
 <221> misc\_feature  
 <222> (83)..(85)  
 <223> Xaa83 can be Asn, Asp or Glu; Xaa84 can be Arg, Asn, Asp,  
 Glu, Gln, His, Lys, Ser or Thr; Xaa85 can be Ala, Arg,  
 Asn, Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe,  
 Pro, Ser, Thr, Trp, Tyr, Val or a peptide bond

<220>  
 <221> misc\_feature  
 <222> (86)..(87)  
 <223> Xaa86 and Xaa87 independently can be Arg, Asn, Asp, Glu,  
 Gln, His, Lys, Ser or Thr  
  
 <220>  
 <221> misc\_feature  
 <222> (89)..(89)  
 <223> Xaa89 can Ile or Val  
  
 <220>  
 <221> misc\_feature  
 <222> (91)..(92)  
 <223> Xaa91 can be Arg or Lys; Xaa92 can be Arg, Asn, Asp,  
 Glu, Gln, His, Lys, Ser or Thr  
  
 <220>  
 <221> misc\_feature  
 <222> (94)..(95)  
 <223> Xaa94 can be Arg, Gln, Glu or Lys; Xaa95 can be Asn or Asp  
  
 <220>  
 <221> misc\_feature  
 <222> (97)..(97)  
 <223> Xaa97 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His,  
 Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val  
  
 <220>  
 <221> misc\_feature  
 <222> (99)..(100)  
 <223> Xaa99 can be Arg, Gln, Glu or Lys; Xaa100 can be Ala Gly,  
 Pro, Ser or Thr  
  
 <220>  
 <221> misc\_feature  
 <222> (104)..(104)  
 <223> Xaa104 can be Arg, Asn, Asp, Glu, Gln, His, Lys, Ser or Thr  
  
 <400> 65

Cys Xaa Xaa Xaa Xaa Leu Tyr Val Xaa Phe Xaa Asp Xaa Gly Trp Xaa  
 1 5 10 15

Asp Trp Ile Ile Ala Pro Xaa Gly Tyr Xaa Ala Xaa Tyr Cys Xaa Gly  
 20 25 30

Xaa Cys Xaa Phe Pro Leu Xaa Xaa Xaa Xaa Asn Xaa Thr Asn His Ala  
 35 40 45

Ile Xaa Gln Thr Leu Val Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Pro  
 50 55 60

Lys Xaa Cys Cys Xaa Pro Thr Xaa Leu Xaa Ala Xaa Ser Xaa Leu Tyr  
 65 70 75 80

Xaa Asp Xaa Xaa Xaa Xaa Xaa Val Xaa Leu Xaa Xaa Tyr Xaa Xaa Met  
85 90 95

Xaa Val Xaa Xaa Cys Gly Cys Xaa  
100

<210> 66  
<211> 107  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: GDF SUBGROUP PATTERN

<220>  
<221> misc\_feature  
<222> (2)..(3)  
<223> Xaa2 can be Arg, Asn, Asp, Glu, Gln, His, Lys, Ser or Thr;  
Xaa3 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His,  
Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val

<220>  
<221> misc\_feature  
<222> (4)..(5)  
<223> Xaa4 and Xaa5 independently can be Arg, Asn, Asp, Glu, Gln,  
His, Lys, Ser or Thr

<220>  
<221> misc\_feature  
<222> (6)..(8)  
<223> Xaa6 can be Cys, Ile, Leu, Met, Phe, Trp, Tyr or Val; Xaa7  
can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile, Leu,  
Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val; Xaa8 can be  
Ile, Leu, Met or Val

<220>  
<221> misc\_feature  
<222> (9)..(9)  
<223> Xaa9 can be Arg, Asn, Asp, Glu, Gln, His, Lys, Ser or Th

<220>  
<221> misc\_feature  
<222> (11)..(14)  
<223> Xaa11 and Xaa12 independently can be Arg, Asn, Asp, Glu, Gln,  
His, Lys, Ser or Thr; Xaa13 can be Ile, Leu, Met or Val;  
Xaa14 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His,  
Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val

<220>  
<221> misc\_feature  
<222> (16)..(17)  
<223> Xaa16 and Xaa17 independently can be Arg, Asn, Asp, Glu, Gln,  
His, Lys, Ser or Thr

<220>  
<221> misc\_feature



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<222> (19)..(20)
<223> Xaa19 and Xaa20 independently can be Ile or Val

<220>
<221> misc_feature
<222> (23)..(25)
<223> Xaa23 can be Arg, Asn, Asp, Glu, Gln, His, Lys, Ser or Thr;
Xaa24 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile,
Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val; Xaa25
can be Phe, Trp or Tyr

<220>
<221> misc_feature
<222> (26)..(29)
<223> Xaa26 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile,
Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val; Xaa27 can
be Ala Gly, Pro, Ser or Thr; Xaa28 can be Arg, Asn, Asp, Glu,
Gln, His, Lys, Ser or Thr; Xaa29 can be Phe, Trp or Tyr

<220>
<221> misc_feature
<222> (31)..(31)
<223> Xaa31 can be Arg, Asn, Asp, Glu, Gln, His, Lys, Ser or Thr

<220>
<221> misc_feature
<222> (33)..(33)
<223> Xaa33 can be Arg, Asn, Asp, Glu, Gln, His, Lys, Ser or Thr

<220>
<221> misc_feature
<222> (35)..(37)
<223> Xaa35 can be Ala, Gly, Pro, Ser or Thr; Xaa36 can be Ala, Arg,
Asn, Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe,
Pro, Ser, Thr, Trp, Tyr or Val; Xaa37 can be Ala, Gly, Pro,
Ser or Thr

<220>
<221> misc_feature
<222> (38)..(39)
<223> Xaa38 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile,
Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val; Xaa39
can be Arg, Asn, Asp, Glu, Gln, His, Lys, Ser or Thr

<220>
<221> misc_feature
<222> (40)..(42)
<223> Xaa40 to Xaa42 independently can be Ala, Arg, Asn, Asp,
Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser,
Thr, Trp, Tyr or Val

<220>
<221> misc_feature
<222> (43)..(46)
<223> Xaa43 to Xaa46 independently can be Ala, Arg, Asn,
Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro,
Ser, Thr, Trp, Tyr, Val or a peptide bond

<220>
<221> misc_feature

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<222> (47)..(48)  
 <223> Xaa47 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val; Xaa48 can be Ala, Gly, Pro, Ser or Thr

<220>  
 <221> misc\_feature  
 <222> (49)..(49)  
 <223> Xaa49 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val

<220>  
 <221> misc\_feature  
 <222> (50)..(53)  
 <223> Xaa50 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val; Xaa51 can be His, Phe, Trp or Tyr; Xaa52 can be Ala, Gly, Pro, Ser or Thr; Xaa53 can be Cys, Ile, Leu, Met, Phe, Trp, Tyr or Val

<220>  
 <221> misc\_feature  
 <222> (54)..(55)  
 <223> Xaa54 can be Ile, Leu, Met or Val; Xaa55 can be Arg, Gln, Glu or Lys; Xaa56 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val; Xaa57 and Xaa58 independently can be Ile, Leu, Met or Val

<220>  
 <221> misc\_feature  
 <222> (59)..(62)  
 <223> Xaa59 can be His, Phe, Trp or Tyr; Xaa60, Xaa61 and Xaa62 independently can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val

<220>  
 <221> misc\_feature  
 <222> (63)..(64)  
 <223> Xaa63 and Xaa64 independently can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr, Val or a peptide bond

<220>  
 <221> misc\_feature  
 <222> (66)..(69)  
 <223> Xaa66 and Xaa67 independently can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val; Xaa68 can be Ala, Gly, Pro, Ser or Thr; Xaa69 can be Arg, Asn, Asp, Glu, Gln, His, Lys, Ser or Thr

<220>  
 <221> misc\_feature  
 <222> (70)..(71)  
 <223> Xaa70 can be Ala, Gly, Pro, Ser or Thr; Xaa71 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val

<220>  
 <221> misc\_feature  
 <222> (75)..(77)  
 <223> Xaa75 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His,

Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val;  
Xaa76 can be Arg, or Lys; Xaa77 can be Cys, Ile, Leu, Met,  
Phe, Trp, Tyr or Val

<220>  
<221> misc\_feature  
<222> (80)..(80)  
<223> Xaa80 can be Ile, Leu, Met or Val

<220>  
<221> misc\_feature  
<222> (82)..(82)  
<223> Xaa82 can be Ile, Leu, Met or Val

<220>  
<221> misc\_feature  
<222> (84)..(86)  
<223> Xaa84 and Xaa85 independently can be Ala, Arg, Asn, Asp,  
Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro,  
Ser, Thr, Trp, Tyr or Val; Xaa86 can be Asp or Glu

<220>  
<221> misc\_feature  
<222> (87)..(88)  
<223> Xaa87 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His,  
Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val;  
Xaa88 can be Arg, Asn, Asp, Glu, Gln, His, Lys, Ser or Thr

<220>  
<221> misc\_feature  
<222> (89)..(91)  
<223> Xaa89 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His,  
Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val;  
Xaa90 can be Arg, Asn, Asp, Glu, Gln, His, Lys, Ser or Thr;  
Xaa 91 is Ile or Val

<220>  
<221> misc\_feature  
<222> (92)..(94)  
<223> Xaa92 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His,  
Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val;  
Xaa93 can be Cys, Ile, Leu, Met, Phe, Trp, Tyr or Val;  
Xaa94 can be Arg or Lys

<220>  
<221> misc\_feature  
<222> (95)..(95)  
<223> Xaa95 can be Arg, Asn, Asp, Glu, Gln, His, Lys, Ser or Thr

<220>  
<221> misc\_feature  
<222> (100)..(103)  
<223> Xaa100 can be Ile or Val; Xaa101 can be Ala, Arg, Asn, Asp,  
Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser,  
Thr, Trp, Tyr or Val; Xaa102 can be Arg, Asn, Asp, Glu, Gln,  
His, Lys, Ser or Thr; Xaa103 can be Arg, Gln, Glu or Lys

<220>  
<221> misc\_feature  
<222> (105)..(105)

<223> Xaa105 can be Ala, Gly, Pro, Ser or Thr

<220>  
 <221> misc\_feature  
 <222> (107)..(107)  
 <223> Xaa107 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val

<400> 66

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Phe Xaa Xaa Xaa Xaa Trp Xaa  
 1 5 10 15

Xaa Trp Xaa Xaa Ala Pro Xaa Xaa Xaa Xaa Xaa Xaa Xaa Cys Xaa Gly  
 20 25 30

Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 35 40 45

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 50 55 60

Pro Xaa Xaa Xaa Xaa Xaa Xaa Xaa Cys Val Pro Xaa Xaa Xaa Ser Pro Xaa  
 65 70 75 80

Ser Xaa Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr  
 85 90 95

Glu Asp Met Xaa Xaa Xaa Xaa Cys Xaa Cys Xaa  
 100 105

<210> 67  
 <211> 109  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: INHIBIN SUBGROUP PATTERN

<220>  
 <221> misc\_feature  
 <222> (2)..(3)  
 <223> Xaa2 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val;  
 Xaa3 is Arg or Lys

<220>  
 <221> misc\_feature  
 <222> (4)..(6)  
 <223> Xaa4 and Xaa5 independently can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val; Xaa6 can be Cys, Ile, Leu, Met, Phe, Trp, Tyr or Val

<220>  
 <221> misc\_feature  
 <222> (7)..(9)  
 <223> Xaa7 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val; Xaa8 can be Ile or Val; Xaa9 can be Arg, Asn, Asp, Glu, Gln, His, Lys, Ser or Thr

<220>  
 <221> misc\_feature  
 <222> (11)..(13)  
 <223> Xaa11 can be Arg, Gln, Glu or Lys; Xaa12 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val; Xaa13 can be Ile, Leu, Met or Val

<220>  
 <221> misc\_feature  
 <222> (16)..(17)  
 <223> Xaa16 can be Asn, Asp or Glu; Xaa17 can be Arg, Asn, Asp, Glu, Gln, His, Lys, Ser or Thr

<220>  
 <221> misc\_feature  
 <222> (20)..(21)  
 <223> Xaa20 can be Ile or Val; Xaa21 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val

<220>  
 <221> misc\_feature  
 <222> (23)..(27)  
 <223> Xaa23 and Xaa24 independently can be Ala, Gly, Pro, Ser or Thr; Xaa25 can be Phe, Tr or Tyr; Xaa26 and Xaa27 independently can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val

<220>  
 <221> misc\_feature  
 <222> (28)..(28)  
 <223> Xaa28 can be Arg, Asn, Asp, Glu, Gln, His, Lys, Ser or Thr

<220>  
 <221> misc\_feature  
 <222> (31)..(31)  
 <223> Xaa31 can be Arg, Asn, Asp, Glu, Gln, His, Lys, Ser or Thr

<220>  
 <221> misc\_feature  
 <222> (33)..(33)  
 <223> Xaa33 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val

<220>  
 <221> misc\_feature  
 <222> (35)..(38)  
 <223> Xaa35 can be Ala, Gly, Pro, Ser or Thr; Xaa36 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val; Xaa37 can be His, Phe,

Trp or Tyr; Xaa38 can be Ile, Leu, Met or Val

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<220>
<221> misc_feature
<222> (39)..(43)
<223> Xaa39 and Xaa40 independently can be Ala, Gly, Pro, Ser or
Thr; Xaa41 and Xaa42 independently can be Ala, Arg, Asn, Asp,
Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser,
Thr, Trp, Tyr or Val; Xaa43 can be Ala, Gly, Pro, Ser or Thr

<220>
<221> misc_feature
<222> (44)..(45)
<223> Xaa44 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His,
Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val;
Xaa45 can be Ala, Gly, Pro, Ser or Thr

<220>
<221> misc_feature
<222> (46)..(47)
<223> Xaa46 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His,
Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val;
Xaa47 can be Ala, Gly, Pro, Ser or Thr

<220>
<221> misc_feature
<222> (48)..(51)
<223> Xaa48 and Xaa49 independently can be Ala, Arg, Asn, Asp,
Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser,
Thr, Trp, Tyr or Val; Xaa50 and Xaa51 independently can be
Ala, Gly, Pro, Ser or Thr

<220>
<221> misc_feature
<222> (52)..(55)
<223> Xaa52 to Xaa54 independently can be Ala, Arg, Asn,
Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro,
Ser, Thr, Trp, Tyr or Val; Xaa55 can be Arg, Asn, Asp, Glu,
Gln, His, Lys, Ser or Thr

<220>
<221> misc_feature
<222> (56)..(59)
<223> Xaa56 to Xaa59 indepedently can be Ala, Arg, Asn,
Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro,
Ser, Thr, Trp, Tyr or Val

<220>
<221> misc_feature
<222> (60)..(63)
<223> Xaa60 to Xaa63 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln,
Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr,
Val or a peptide bond

<220>
<221> misc_feature
<222> (64)..(65)
<223> Xaa64 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His,
Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val;
Xaa65 can be Ala, Gly, Pro, Ser or Thr
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<220>  
 <221> misc\_feature  
 <222> (66)..(69)  
 <223> Xaa66 to Xaa67 independently can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val; Xaa68 can be Arg, Asn, Asp, Glu, Gln, His, Lys, Ser or Thr; Xaa69 can be Ala, Gly, Pro, Ser or Thr

<220>  
 <221> misc\_feature  
 <222> (72)..(72)  
 <223> Xaa72 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val

<220>  
 <221> misc\_feature  
 <222> (73)..(74)  
 <223> Xaa73 and Xaa74 independently can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val

<220>  
 <221> misc\_feature  
 <222> (76)..(80)  
 <223> Xaa76 can be Ala, Gly, Pro, Ser or Thr; Xaa77 can be Arg, Asn, Asp, Glu, Gln, His, Lys, Ser or Thr; Xaa78 can be Leu or Met; Xaa79 can be Arg, Asn, Asp, Glu, Gln, His, Lys, Ser or Thr; Xaa80 can be Ala, Gly, Pro, Ser or Thr

<220>  
 <221> misc\_feature  
 <222> (81)..(83)  
 <223> Xaa81 can be Leu or Met; Xaa82 can be Arg, Asn, Asp, Glu, Gln, His, Lys, Ser or Thr; Xaa83 can be Ile, Leu, Met or Val

<220>  
 <221> misc\_feature  
 <222> (84)..(87)  
 <223> Xaa84 to Xaa86 independently can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val; Xaa87 can be Arg, Asn, Asp, Glu, Gln, His, Lys, Ser or Thr

<220>  
 <221> misc\_feature  
 <222> (89)..(89)  
 <223> Xaa89 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val

<220>  
 <221> misc\_feature  
 <222> (90)..(90)  
 <223> Xaa90 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr, Val or a peptide bond

<220>  
 <221> misc\_feature  
 <222> (91)..(93)

<223> Xaa91 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val;  
 Xaa92 can be Arg, Asn, Asp, Glu, Gln, His, Lys, Ser or Thr;  
 Xaa93 can be Cys, Ile, Leu, Met, Phe, Trp, Tyr or Val

<220>

<221> misc\_feature

<222> (94)..(97)

<223> Xaa94 to Xaa95 independently can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val; Xaa96 can be Arg, Gln, Glu or Lys; Xaa97 can be Arg, Asn, Asp, Glu, Gln, His, Lys, Ser or Thr

<220>

<221> misc\_feature

<222> (98)..(99)

<223> Xaa98 can be Ile or Val; Xaa99 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val

<220>

<221> misc\_feature

<222> (101)..(104)

<223> Xaa101 can be Leu or Met; Xaa102 can be Ile, Leu, Met or Val; Xaa103 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val; Xaa104 can be Gln or Glu

<220>

<221> misc\_feature

<222> (105)..(105)

<223> Xaa105 can be Arg, Asn, Asp, Glu, Gln, His, Lys, Ser or Thr

<220>

<221> misc\_feature

<222> (107)..(107)

<223> Xaa107 can be Ala or Gly

<220>

<221> misc\_feature

<222> (109)..(109)

<223> Xaa109 can be Ala, Arg, Asn, Asp, Cys, Glu, Gln, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr or Val

<400> 67

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Phe Xaa Xaa Xaa Gly Trp Xaa  
 1 5 10 15

Xaa Trp Ile Xaa Xaa Pro Xaa Xaa Xaa Xaa Xaa Xaa Tyr Cys Xaa Gly  
 20 25 30

Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 35 40 45

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
 50 55 60



Xaa Xaa Xaa Xaa Xaa Cys Cys Xaa Xaa Xaa Pro Xaa Xaa Xaa Xaa Xaa  
65 70 75 80

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Asp Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
85 90 95

Xaa Xaa Xaa Asn Xaa Xaa Xaa Xaa Xaa Cys Xaa Cys Xaa  
100 105

<210> 68  
<211> 139  
<212> PRT  
<213> Homo sapiens

<220>  
<223> Mature H2223 mutant

<400> 68

Ser Thr Gly Ser Lys Gln Arg Ser Gln Asn Arg Ser Lys Thr Pro Lys  
1 5 10 15

Asn Gln Glu Ala Leu Arg Met Ala Asn Val Ala Glu Asn Ser Ser Ser  
20 25 30

Asp Gln Arg Gln Ala Cys Lys Lys His Glu Leu Tyr Val Ser Phe Arg  
35 40 45

Asp Leu Gly Trp Gln Asp Trp Ile Ile Ala Pro Glu Gly Tyr Ala Ala  
50 55 60

Tyr Tyr Cys Glu Gly Glu Cys Ala Phe Pro Leu Asn Ser Tyr Met Asn  
65 70 75 80

Ala Thr Asn His Ala Ile Val Gln Thr Leu Val His Phe Ile Asn Pro  
85 90 95

Glu Thr Val Pro Lys Pro Cys Cys Ala Pro Thr Gln Leu Asn Ala Ile  
100 105 110

Ser Val Leu Tyr Phe Asp Asp Ser Ser Asn Val Ile Leu Lys Lys Tyr  
115 120 125

Glu Asp Met Val Val Glu Ala Cys Gly Cys Arg  
130 135

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<210> 69
<211> 117
<212> PRT
<213> Homo sapiens

<220>
<223> Trypsin truncated H2223 mutant

<400> 69

Met Ala Asn Val Ala Glu Asn Ser Ser Ser Asp Gln Arg Gln Ala Cys
1          5          10          15

Lys Lys His Glu Leu Tyr Val Ser Phe Arg Asp Leu Gly Trp Gln Asp
          20          25          30

Trp Ile Ile Ala Pro Glu Gly Tyr Ala Ala Tyr Tyr Cys Glu Gly Glu
          35          40          45

Cys Ala Phe Pro Leu Asn Ser Tyr Met Asn Ala Thr Asn His Ala Ile
          50          55          60

Val Gln Thr Leu Val His Phe Ile Asn Pro Glu Thr Val Pro Lys Pro
65          70          75          80

Cys Cys Ala Pro Thr Gln Leu Asn Ala Ile Ser Val Leu Tyr Phe Asp
          85          90          95

Asp Ser Ser Asn Val Ile Leu Lys Lys Tyr Glu Asp Met Val Val Glu
          100          105          110

Ala Cys Gly Cys Arg
          115

<210> 70
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer #1

<220>
<221> CDS
<222> (1)..(33)

<400> 70
gcg ccc acg cag ctc agc gct atc tcc gtc ctc
Ala Pro Thr Gln Leu Ser Ala Ile Ser Val Leu
1          5          10

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33

<210> 71  
<211> 11  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Amino acid sequence encoded by Primer #1

<400> 71

Ala Pro Thr Gln Leu Ser Ala Ile Ser Val Leu  
1 5 10

<210> 72  
<211> 43  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer #2

<400> 72  
ctatctgcag ccacaagctt cgaccacat gtcttcgtat ttc 43

<210> 73  
<211> 43  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Complement of Primer #2

<220>  
<221> CDS  
<222> (2)..(43)

<400> 73  
g aaa tac gaa gac atg gtg gtc gaa gct tgt ggc tgc aga tag 43  
Lys Tyr Glu Asp Met Val Val Glu Ala Cys Gly Cys Arg  
1 5 10

<210> 74  
<211> 13  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Amino acid sequence encoded by complement of Primer #2

<400> 74

Lys Tyr Glu Asp Met Val Val Glu Ala Cys Gly Cys Arg  
1 5 10

<210> 75

<211> 44  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Description of Artificial Sequence: the sequence  
 between the T7 promoter, at the XbaI site, and the  
 ATG codon  
  
 <400> 75  
 tctagaataa ttttggttaa cctttaagaa ggagatatac gatg 44  
  
 <210> 76  
 <211> 19  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Description of Artificial Sequence: Primer #3  
  
 <400> 76  
 taatacgact cactatagg 19  
  
 <210> 77  
 <211> 18  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Description of Artificial Sequence: Primer #4  
  
 <400> 77  
 gctgagctgc gtgggcgc 18  
  
 <210> 78  
 <211> 18  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Description of Artificial Sequence: complement of Primer #4  
  
 <220>  
 <221> CDS  
 <222> (1)..(18)  
  
 <400> 78  
 gcg ccc acg cag ctc agc 18  
 Ala Pro Thr Gln Leu Ser  
 1 5  
  
 <210> 79  
 <211> 6  
 <212> PRT  
 <213> Artificial Sequence

<220>  
<223> Amino acid sequence encoded by complement of Primer #4

<400> 79

Ala Pro Thr Gln Leu Ser  
1 5

<210> 80  
<211> 23  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer #5

<400> 80  
ggatcctatc tgcagccaca agc 23

<210> 81  
<211> 23  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: complement of Primer #5

<220>  
<221> CDS  
<222> (1)..(18)

<400> 81  
gct tgt ggc tgc aga tag gatcc 23  
Ala Cys Gly Cys Arg  
1 5

<210> 82  
<211> 5  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Amino acid sequence encoded by complement of Primer #5

<400> 82

Ala Cys Gly Cys Arg  
1 5

<210> 83  
<211> 102  
<212> PRT  
<213> Homo sapiens

<220>  
 <223> CDMP-1/GDF-5  
 <400> 83  
 Cys Ser Arg Lys Ala Leu His Val Asn Phe Lys Asp Met Gly Trp Asp  
 1 5 10 15  
 Asp Trp Ile Ile Ala Pro Leu Glu Tyr Glu Ala Phe His Cys Glu Gly  
 20 25 30  
 Leu Cys Glu Phe Pro Leu Arg Ser His Leu Glu Pro Thr Asn His Ala  
 35 40 45  
 Val Ile Gln Thr Leu Met Asn Ser Met Asp Pro Glu Ser Thr Pro Pro  
 50 55 60  
 Thr Cys Cys Val Pro Thr Arg Leu Ser Pro Ile Ser Ile Leu Phe Ile  
 65 70 75 80  
 Asp Ser Ala Asn Asn Val Val Tyr Lys Gln Tyr Glu Asp Met Val Val  
 85 90 95  
 Glu Ser Cys Gly Cys Arg  
 100

<210> 84  
 <211> 102  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> CDMP-2/GDF-6  
 <400> 84  
 Cys Ser Lys Lys Pro Leu His Val Asn Phe Lys Glu Leu Gly Trp Asp  
 1 5 10 15  
 Asp Trp Ile Ile Ala Pro Leu Glu Tyr Glu Ala Tyr His Cys Glu Gly  
 20 25 30  
 Val Cys Asp Phe Pro Leu Arg Ser His Leu Glu Pro Thr Asn His Ala  
 35 40 45  
 Ile Ile Gln Thr Leu Met Asn Ser Met Asp Pro Gly Ser Thr Pro Pro  
 50 55 60  
 Ser Cys Cys Val Pro Thr Lys Leu Thr Pro Ile Ser Ile Leu Tyr Ile



1                      5                      10                      15  
 Asp Trp Ile Ile Ala Pro Leu Glu Tyr Glu Ala Tyr His Cys Glu Gly  
                     20                      25                      30  
 Val Cys Asp Phe Pro Leu Arg Ser His Leu Glu Pro Thr Asn His Ala  
                     35                      40                      45  
 Ile Ile Gln Thr Leu Met Asn Ser Met Asp Pro Gly Ser Thr Pro Pro  
                     50                      55                      60  
 Ser Cys Cys Val Pro Thr Lys Leu Thr Pro Ile Ser Ile Leu Tyr Ile  
                     65                      70                      75                      80  
 Asp Ala Gly Asn Asn Val Val Tyr Asn Glu Tyr Glu Glu Met Val Val  
                     85                      90                      95  
 Glu Ser Cys Gly Cys Arg  
                     100

<210> 87  
 <211> 102  
 <212> PRT  
 <213> Mus musculus

<220>  
 <223> GDF-7

<400> 87

Cys Ser Arg Lys Ser Leu His Val Asp Phe Lys Glu Leu Gly Trp Asp  
 1                      5                      10                      15  
 Asp Trp Ile Ile Ala Pro Leu Asp Tyr Glu Ala Tyr His Cys Glu Gly  
                     20                      25                      30  
 Val Cys Asp Phe Pro Leu Arg Ser His Leu Glu Pro Thr Asn His Ala  
                     35                      40                      45  
 Ile Ile Gln Thr Leu Leu Asn Ser Met Ala Pro Asp Ala Ala Pro Ala  
                     50                      55                      60  
 Ser Cys Cys Val Pro Ala Arg Leu Ser Pro Ile Ser Ile Leu Tyr Ile  
                     65                      70                      75                      80  
 Asp Ala Ala Asn Asn Val Val Tyr Lys Gln Tyr Glu Asp Met Val Val  
                     85                      90                      95



Glu Ala Cys Gly Cys Arg  
100

<210> 88  
<211> 102  
<212> PRT  
<213> Homo sapiens

<220>  
<223> CDMP-3 construct

<400> 88

Cys Ser Arg Lys Pro Leu His Val Asp Phe Lys Glu Leu Gly Trp Asp  
1 5 10 15

Asp Trp Ile Ile Ala Pro Leu Asp Tyr Glu Ala Tyr His Cys Glu Gly  
20 25 30

Leu Cys Asp Phe Pro Leu Arg Ser His Leu Glu Pro Thr Asn His Ala  
35 40 45

Ile Ile Gln Thr Leu Leu Asn Ser Met Ala Pro Asp Ala Ala Pro Ala  
50 55 60

Ser Cys Cys Val Pro Ala Arg Leu Ser Pro Ile Ser Ile Leu Tyr Ile  
65 70 75 80

Asp Ala Ala Asn Asn Val Val Tyr Lys Gln Tyr Glu Asp Met Val Val  
85 90 95

Glu Ala Cys Gly Cys Arg  
100

<210> 89  
<211> 129  
<212> PRT  
<213> Homo sapiens

<220>  
<223> H2487

<400> 89

Met Thr Met Ile Thr Asn Ser Leu Ala Ser Trp Arg Glu Pro Ser Phe  
1 5 10 15

Met Ala Leu Ser Ser Ser Asp Gln Arg Gln Ala Cys Lys Lys His Glu  
20 25 30

Leu Tyr Val Ser Phe Arg Asp Leu Gly Trp Gln Asp Trp Ile Ile Ala  
 35 40 45

Pro Glu Gly Tyr Ala Ala Tyr Tyr Cys Glu Gly Glu Cys Ala Phe Pro  
 50 55 60

Leu Asn Ser Tyr Met Asn Ala Thr Asn His Ala Ile Val Gln Thr Leu  
 65 70 75 80

Val His Phe Ile Asn Pro Glu Thr Val Pro Lys Pro Cys Cys Ala Pro  
 85 90 95

Thr Gln Leu Ser Ala Ile Ser Val Leu Tyr Phe Asp Asp Ser Ser Asn  
 100 105 110

Val Ile Leu Lys Lys Tyr Glu Asp Met Val Val Glu Ala Cys Gly Cys  
 115 120 125

Arg

<210> 90  
 <211> 405  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <223> H2487

<400> 90  
 atgaccatga ttacgaattc cctggccagc tggagagagc caagcttcat ggccttaagc 60  
 agcagcgacc agaggcaggc ctgtaagaag cagcagctgt atgtcagctt ccgagacctg 120  
 ggctggcagg actggatcat cgcgccctgaa ggctacgccg cctactactg tgaggggggag 180  
 tgtgccttcc ctctgaactc ctacatgaac gccaccaacc acgccatcgt gcagacgctg 240  
 gtccacttca tcaacccgga aacggtgccc aagccctgct gtgcgcccac gcagctcagc 300  
 gctatctccg tcctctactt cgatgacagc tccaacgtca tcctgaagaa atacgaagac 360  
 atggtggtcg aagcttgtgg ctgcagatag ctctccgag aattc 405

<210> 91  
 <211> 46  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> H2440

<400> 91

Met Ala Asp Asn His His His His His His Met Gly Ser Lys Gln Arg  
1 5 10 15

Ser Gln Asn Arg Ser Lys Thr Pro Lys Asn Gln Glu Ala Leu Arg Met  
20 25 30

Ala Asn Val Ala Glu Asn Ser Ser Ser Asp Gln Arg Gln Ala  
35 40 45

<210> 92

<211> 143

<212> DNA

<213> Homo sapiens

<220>

<223> H2440

<400> 92

ccatggctga caaccatcac catcatcatc accatatggg gagcaaacag cgcagccaga 60

accgctccaa gacgcccgaag aaccaggaag ccttgcgat ggccaacgtg gcagagaaca 120

gcagcagcga ccagaggcag gcc 143

<210> 93

<211> 241

<212> DNA

<213> Homo sapiens

<220>

<223> H2521

<400> 93

atgatcgaat tcatggctga caacaaattc aacaaggaac agcagaacgc gttctacgag 60

atcttgacc tgccgaacct gaacgaagag cagcgtaacg gttcatcca aagcctgaaa 120

gaagagccgt ctgagtctgc gaatctgcta gcggatgcca agaaactgaa cgatgcgcag 180

gcaccgaaat cggccatggc caacgtggca gagaacagca gcagcgacca gaggcaggcc 240

t 241

<210> 94

<211> 80

<212> PRT

<213> Homo sapiens

<220>

<223> H2521

<400> 94

Met Ile Glu Phe Met Ala Asp Asn Lys Phe Asn Lys Glu Gln Gln Asn  
 1 5 10 15

Ala Phe Tyr Glu Ile Leu His Leu Pro Asn Leu Asn Glu Glu Gln Arg  
 20 25 30

Asn Gly Phe Ile Gln Ser Leu Lys Glu Glu Pro Ser Gln Ser Ala Asn  
 35 40 45

Leu Leu Ala Asp Ala Lys Lys Leu Asn Asp Ala Gln Ala Pro Lys Ser  
 50 55 60

Ala Met Ala Asn Val Ala Glu Asn Ser Ser Ser Asp Gln Arg Gln Ala  
 65 70 75 80

<210> 95  
 <211> 334  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <223> H2525

<400> 95  
 atgatcgaat tcatggctga caacaaattc aacaaggaac agcagaacgc gttctacgag 60  
 atcttgacc tgccgaacct gaacgaagag cagcgtaacg gcttcatcca aagcctgaaa 120  
 gaagagccgt ctcagtctgc gaatctgcta gcggatgcca agaaactgaa cgatgcgcag 180  
 gcaccgaaat cggccatggc tgacaaccat caccatcatc accatatggg gagcaaacag 240  
 cgcagccaga accgctccaa gacgcccgaag aaccaggaag ccctgcggat ggccaacgtg 300  
 gcagagaaca gcagcagcga ccagaggcag gcct 334

<210> 96  
 <211> 111  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> H2525

<400> 96

Met Ile Glu Phe Met Ala Asp Asn Lys Phe Asn Lys Glu Gln Gln Asn  
 1 5 10 15

Ala Phe Tyr Glu Ile Leu His Leu Pro Asn Leu Asn Glu Glu Gln Arg  
 20 25 30

Asn Gly Phe Ile Gln Ser Leu Lys Glu Glu Pro Ser Gln Ser Ala Asn  
 35 40 45

Leu Leu Ala Asp Ala Lys Lys Leu Asn Asp Ala Gln Ala Pro Lys Ser  
 50 55 60

Ala Met Ala Asp Asn His His His His His His Met Gly Ser Lys Gln  
 65 70 75 80

Arg Ser Gln Asn Arg Ser Lys Thr Pro Lys Asn Gln Glu Ala Leu Arg  
 85 90 95

Met Ala Asn Val Ala Glu Asn Ser Ser Ser Asp Gln Arg Gln Ala  
 100 105 110

<210> 97  
 <211> 268  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <223> H2527

<400> 97  
 atgatcgaat tcatggctga caacaaattc aacaaggaac agcagaacgc gttctacgag 60  
 atcttgacc tgccgaacct gaacgaagag cagcgtaacg gcttcatcca aagcctgaaa 120  
 gaagagccgt ctcagtctgc gaatctgcta gcggatgcc aaaaactgaa cgatgcgcag 180  
 gcaccgaaat cggatcatca tcaccatcac cactcggatc ccatggccaa cgtggcagag 240  
 aacagcagca gcgaccagag gcaggcct 268

<210> 98  
 <211> 89  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> H2527

<400> 98

Met Ile Glu Phe Met Ala Asp Asn Lys Phe Asn Lys Glu Gln Gln Asn  
 1 5 10 15

Ala Phe Tyr Glu Ile Leu His Leu Pro Asn Leu Asn Glu Glu Gln Arg  
 20 25 30

Asn Gly Phe Ile Gln Ser Leu Lys Glu Glu Pro Ser Gln Ser Ala Asn

35

40

45

Leu Leu Ala Asp Ala Lys Lys Leu Asn Asp Ala Gln Ala Pro Lys Ser  
50 55 60

Asp His His His His His His Ser Asp Pro Met Ala Asn Val Ala Glu  
65 70 75 80

Asn Ser Ser Ser Asp Gln Arg Gln Ala  
85

<210> 99  
<211> 647  
<212> DNA  
<213> Homo sapiens

<220>  
<223> H2528

<400> 99  
ccatgatcga attcatggct gacaacaaat tcaacaagga acagcagaac gcgttctacg 60  
agatcttgca cctgccgaac ctgaacgaag agcagcgtaa cggcttcac caaagcctga 120  
aagaagagcc gtctcagtct gcgaatctgc tagcggatgc caagaaactg aacgatgcgc 180  
aggcaccgaa atcggatcat catcaccatc accactcgga tcccatggcg ttggccggga 240  
cgcgtacagc gcagggcagc ggcggaggtg ccggcagagg tcatggtcga cgtggtagat 300  
ctcgtctcag ccgcaagccg ttgcacgtgg acttcaagga gctcggctgg gacgactgga 360  
tcatcgcgcc gctggactac gaggcgtacc actgcgaggg cctttgcgac ttccctttgc 420  
gttcgcacct cgagcccacc aaccatgcc a cattcagac gctgctcaac tccatggcac 480  
cagacgcggc gccggcctcc tgctgtgtgc cagcgcgcct cagccccatc agcatcctct 540  
acatcgacgc cgccaacaac gttgtctaca agcaatacga ggacatggtg gtggaggcct 600  
gcggctgtag gtaagcttgt ggctgcagat agtcctccg agaattc 647

<210> 100  
<211> 203  
<212> PRT  
<213> Homo sapiens

<220>  
<223> H2528

<400> 100

Met Ile Glu Phe Met Ala Asp Asn Lys Phe Asn Lys Glu Gln Gln Asn  
1 5 10 15

Ala Phe Tyr Glu Ile Leu His Leu Pro Asn Leu Asn Glu Glu Gln Arg  
20 25 30

Asn Gly Phe Ile Gln Ser Leu Lys Glu Glu Pro Ser Gln Ser Ala Asn  
35 40 45

Leu Leu Ala Asp Ala Lys Lys Leu Asn Asp Ala Gln Ala Pro Lys Ser  
50 55 60

Asp His His His His His His Ser Asp Pro Met Ala Leu Ala Gly Thr  
65 70 75 80

Arg Thr Ala Gln Gly Ser Gly Gly Gly Ala Gly Arg Gly His Gly Arg  
85 90 95

Arg Gly Arg Ser Arg Cys Ser Arg Lys Pro Leu His Val Asp Phe Lys  
100 105 110

Glu Leu Gly Trp Asp Asp Trp Ile Ile Ala Pro Leu Asp Tyr Glu Ala  
115 120 125

Tyr His Cys Glu Gly Leu Cys Asp Phe Pro Leu Arg Ser His Leu Glu  
130 135 140

Pro Thr Asn His Ala Ile Ile Gln Thr Leu Leu Asn Ser Met Ala Pro  
145 150 155 160

Asp Ala Ala Pro Ala Ser Cys Cys Val Pro Ala Arg Leu Ser Pro Ile  
165 170 175

Ser Ile Leu Tyr Ile Asp Ala Ala Asn Asn Val Val Tyr Lys Gln Tyr  
180 185 190

Glu Asp Met Val Val Glu Ala Cys Gly Cys Arg  
195 200

<210> 101  
<211> 47  
<212> DNA  
<213> Homo sapiens

<220>  
<223> H2469

<400> 101  
ccatggccaa cgtggcagag aacagcagca gcgaccagag gcaggcc

47

<210> 102  
<211> 15  
<212> PRT  
<213> Homo sapiens

<220>  
<223> H2469

<400> 102

Met Ala Asn Val Ala Glu Asn Ser Ser Ser Asp Gln Arg Gln Ala  
1 5 10 15

<210> 103  
<211> 129  
<212> DNA  
<213> Homo sapiens

<220>  
<223> H2510

<400> 103

atgtccacgg ggagcaaaca gcgcagccag aaccgctcca agacgcccaa gaaccaggaa 60  
gccctgcgga tggccagctg gagagagcca agcttcattg ccttaagcag cagcgaccag 120  
aggcaggcc 129

<210> 104  
<211> 43  
<212> PRT  
<213> Homo sapiens

<220>  
<223> H2510

<400> 104

Met Ser Thr Gly Ser Lys Gln Arg Ser Gln Asn Arg Ser Lys Thr Pro  
1 5 10 15

Lys Asn Gln Glu Ala Leu Arg Met Ala Ser Trp Arg Glu Pro Ser Phe  
20 25 30

Met Ala Leu Ser Ser Ser Asp Gln Arg Gln Ala  
35 40

<210> 105  
<211> 168  
<212> DNA  
<213> Homo sapiens

<220>  
<223> H2523



<400> 105  
atgtccacgg ggagcaaaca ggcgagccag aaccgctcca agacgcccaa gaaccaggaa 60  
gccctgcgga tggccagctg gagagagcca agcttcatgg ccttaagcag cagcgaccag 120  
aggcaggcca acgtggcaga gaacagcagc agcgaccaga ggcaggcc 168

<210> 106  
<211> 56  
<212> PRT  
<213> Homo sapiens

<220>  
<223> H2523

<400> 106

Met Ser Thr Gly Ser Lys Gln Arg Ser Gln Asn Arg Ser Lys Thr Pro  
1 5 10 15

Lys Asn Gln Glu Ala Leu Arg Met Ala Ser Trp Arg Glu Pro Ser Phe  
20 25 30

Met Ala Leu Ser Ser Ser Asp Gln Arg Gln Ala Asn Val Ala Glu Asn  
35 40 45

Ser Ser Ser Asp Gln Arg Gln Ala  
50 55

<210> 107  
<211> 194  
<212> DNA  
<213> Homo sapiens

<220>  
<223> H2524

<400> 107  
ccatggctga caaccatcac catcatcacc atatggggag caaacagcgc agccagaacc 60  
gctccaagac gcccaagaac caggaagccc tgcggatggc cagctggaga gagccaagct 120  
tcatggcctt aagcagcagc gaccagaggc aggccaacgt ggcagagaac agcagcagcg 180  
accagaggca ggcc 194

<210> 108  
<211> 64  
<212> PRT  
<213> Homo sapiens

<220>  
<223> H2524

<400> 108

Met Ala Asp Asn His His His His His His Met Gly Ser Lys Gln Arg  
1 5 10 15

Ser Gln Asn Arg Ser Lys Thr Pro Lys Asn Gln Glu Ala Leu Arg Met  
20 25 30

Ala Ser Trp Arg Glu Pro Ser Phe Met Ala Leu Ser Ser Ser Asp Gln  
35 40 45

Arg Gln Ala Asn Val Ala Glu Asn Ser Ser Ser Asp Gln Arg Gln Ala  
50 55 60

<210> 109

<211> 39

<212> PRT

<213> Homo sapiens

<220>

<223> 2421

<400> 109

Pro Thr Cys Cys Val Pro Thr Arg Leu Ser Pro Ile Ser Ile Leu Phe  
1 5 10 15

Ile Asp Ala Ser Asn Asn Val Val Leu Lys Lys Tyr Arg Asn Met Val  
20 25 30

Val Arg Ala Cys Gly Cys Arg  
35

<210> 110

<211> 39

<212> PRT

<213> Homo sapiens

<220>

<223> H2406

<400> 110

Asn Ser Cys Cys Val Pro Thr Lys Leu Thr Pro Ile Ser Ile Leu Tyr  
1 5 10 15

Phe Asp Asp Ser Ser Asn Val Ile Leu Lys Lys Tyr Arg Asn Met Val  
20 25 30

Val Arg Ala Cys Gly Cys Arg

35

<210> 111  
<211> 39  
<212> PRT  
<213> Homo sapiens

<220>  
<223> 2410

<400> 111

Asn Ser Cys Cys Val Pro Thr Glu Leu Ser Ala Ile Ser Met Leu Tyr  
1 5 10 15

Leu Asp Glu Asn Glu Lys Val Val Leu Lys Asn Tyr Gln Asp Met Val  
20 25 30

Val Glu Gly Cys Gly Cys Arg  
35

<210> 112  
<211> 39  
<212> PRT  
<213> Homo sapiens

<220>  
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Lys Pro Cys Cys Ala Pro Thr Gln Leu Asn Ala Ile Ser Val Leu Tyr  
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Phe Asp Asp Ser Ser Asn Val Ile Leu Lys Lys Tyr Arg Asn Met Val  
20 25 30

Val Arg Ala Cys Gly Cys Arg  
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Lys Pro Cys Cys Ala Pro Thr Gln Leu Asn Ala Ile Ser Val Leu Tyr  
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Val Arg Ala Cys Gly Cys Arg  
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Val Glu Ala Cys Gly Cys Arg  
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Asn Ser Cys Cys Val Pro Thr Lys Leu Thr Pro Ile Ser Val Leu Tyr  
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Phe Asp Asp Ser Ser Asn Val Ile Leu Lys Lys Tyr Glu Asp Met Val  
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Val Glu Ser Cys Gly Cys Arg  
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Asn Ser Cys Cys Val Pro Thr Lys Leu Thr Pro Ile Ser Val Leu Tyr  
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Val Arg Ser Cys Gly Cys Arg  
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<210> 117

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Asn Ser Cys Cys Val Pro Thr Glu Leu Ser Ala Ile Ser Val Leu Tyr  
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Phe Asp Asp Ser Ser Asn Val Ile Leu Lys Lys Tyr Glu Asp Met Val  
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Val Glu Ala Cys Gly Cys Arg  
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Asn Ser Cys Cys Val Pro Thr Glu Leu Asn Ala Ile Ser Val Leu Tyr  
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Phe Asp Asp Ser Ser Asn Val Ile Leu Lys Lys Tyr Glu Asp Met Val  
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Val Glu Ala Cys Gly Cys Arg  
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Lys Pro Cys Cys Ala Pro Thr Glu Leu Ser Ala Ile Ser Val Leu Tyr  
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Phe Asp Asp Ser Ser Asn Val Ile Leu Lys Lys Tyr Glu Asp Met Val  
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Val Glu Ala Cys Gly Cys Arg  
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Lys Pro Cys Cys Ala Pro Thr Gln Leu Ser Ala Ile Ser Val Leu Tyr  
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Val Glu Ala Cys Gly Cys Arg  
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Lys Pro Cys Cys Ala Pro Thr Glu Leu Asn Ala Ile Ser Val Leu Tyr  
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Phe Asp Asp Ser Ser Asn Val Ile Leu Lys Lys Tyr Arg Asn Met Val  
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Val Arg Ala Cys Gly Cys Arg  
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Phe Asp Asp Ser Ser Asn Val Ile Leu Lys Lys Tyr Arg Asn Met Val  
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Val Arg Ala Cys Gly Cys Arg  
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Val Arg Ala Cys Gly Cys Arg  
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Met Gln Ala Lys His Lys Gln Arg Lys Arg Leu Lys Ser Ser Cys

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10

15